The Pebble-band of the Elgin Trias and its Wind-worn Pebbles.
By WM. MACKIE, *M.A., M.D.*

The Cutties Hillock pebble-band, which has figured so largely in the discussion of the succession of the Elgin sandstones, is not, as has generally been contended, a pure localism. Two new openings into the Triassic rocks of the area show that it is present at five widely separated points. Its characters are constant in all. There is evidence that it is basal in position in the Triassic formation, and taking it as a datum line one is enabled to fix the relation of the Triassic to the underlying U.O.R. rocks with some certainty. It shows that the former overlie the truncated edges of the latter beds in a thin cake, which is probably nowhere more than 100 feet in thickness on a surface slightly inclined upwards from the south-east to the north-west, while the U.O.R. rocks steadily dip at almost constant angles in the opposite direction. Other facts definitely ascertained are, that the two series of rocks wherever they occur in proximity invariably show marked discordance of dip and strike, and that the Cutties Hillock area is detached from the other local areas of Triassic rocks, U.O.R. rocks having been traced all round it, and quite a mile intervening between it and the Spynie and Findrassie area to the north-west, in which interval U.O.R. rocks with discordant dip and strike also appear.

Another interest attaches to the pebble-band in that its pebbles, which are all but exclusively of quartz, quartzite, vein quartz, and chert, show unmistakable evidence of sand-blast action.

'Pyramidal pebbles' are common, with surfaces showing different degrees of polishing. Some of them even present strongly concave surfaces and finer depressions beautifully polished. A considerable number show 'flaking' of their edges, and the surfaces so formed have subsequently been subjected to different degrees of polishing. The cherts are beautifully fretted, and exhibit in perfection the results of differential etching.

Inquiries as to definite orientation of the more polished surfaces of the pebbles have hitherto failed to yield results. The author believes that no such definite orientation obtains, and is of opinion that the pebbles had been subjected to continued sand-blast action in some other locality, and were suddenly and forcibly transferred by the action of water to their present position, where many of them were again subjected to further sand-blast action.

The result of the examination of the pebbles supports the author's contention, based on the microscopical characters of their constituent sand-grains, that the Cutties Hillock sandstones are really Triassic sand-dunes. Other reasons for arriving at the same conclusion are: the peculiar undulating bedding of the sandstones, differences in the mode of occurrence as well as ontological differences of the fossils from what obtain in the adjoining areas.

In the case of the other local Triassic areas deposition in water is assumed, though the *débris* had evidently in some cases for a long time previously been subjected to wind action on a land surface.

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LONDON

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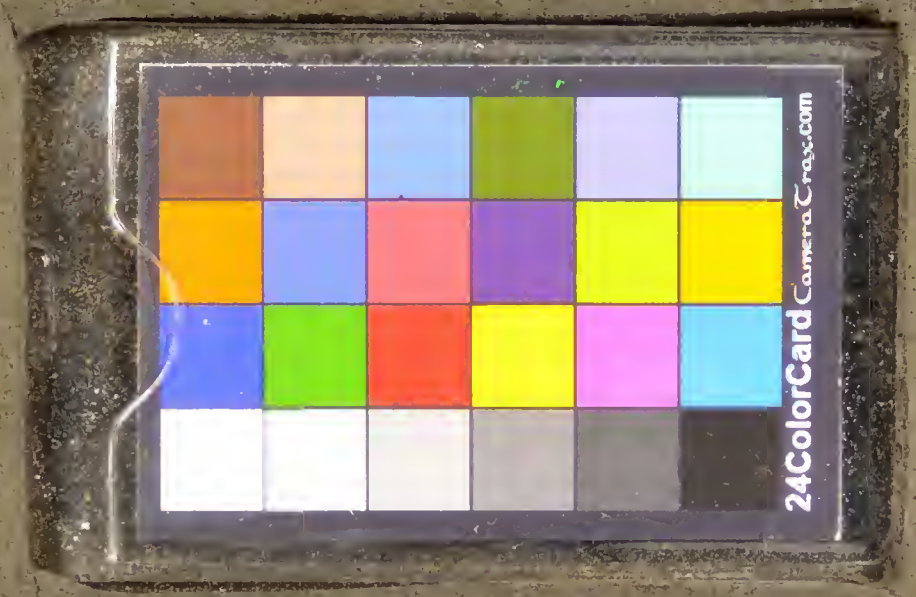
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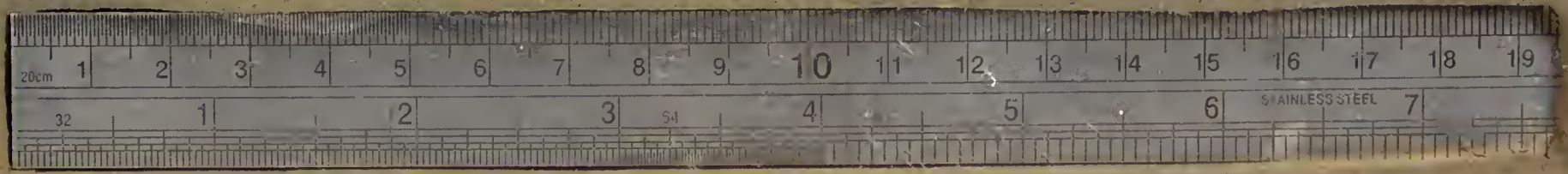
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